

borne out by the fact that the species is extinct. There is abundant evidence from mammalian remains that the caves were more or less freely accessible to animals from the outside during the long period of the Pleistocene.

EXPLANATION OF PLATES 5, AND 6

PLATE 5, Figs. 1, 2, 3. *Monadenia churchi* Hanna & Smith, n. sp. Holotype No. 5806 (C. A. S.) from 2.1 miles East of Payne's Creek Station, Tehama County, California. Diameter 20.0 mm.; altitude 11.3 mm.

Figs. 4, 5. *Monadenia churchi* Hanna & Smith, n. sp. Paratype. No. 5807 (C. A. S.) from Deer Creek, Tehama County, California. Apex and part of upper side of body whorl, enlarged about $\times 15$ to show details of sculpture. Diameter 23.5 mm., altitude 13.6 mm.

Figs. 6, 7, 8. *Monadenia troglodytes* Hanna & Smith, n. sp. Holotype No. 32394 (Univ. Calif. Dept. Paleo. Coll.) from Samwel Cave, Shasta County, California. Pleistocene. Diameter 24.2 mm., altitude 10.8 mm.

PLATE 6, Fig. 8. *Monadenia churchi* Hanna & Smith, n. sp. Genitalia of specimen from type lot, 2.1 miles East of Payne's Creek Station, Tehama County, California.

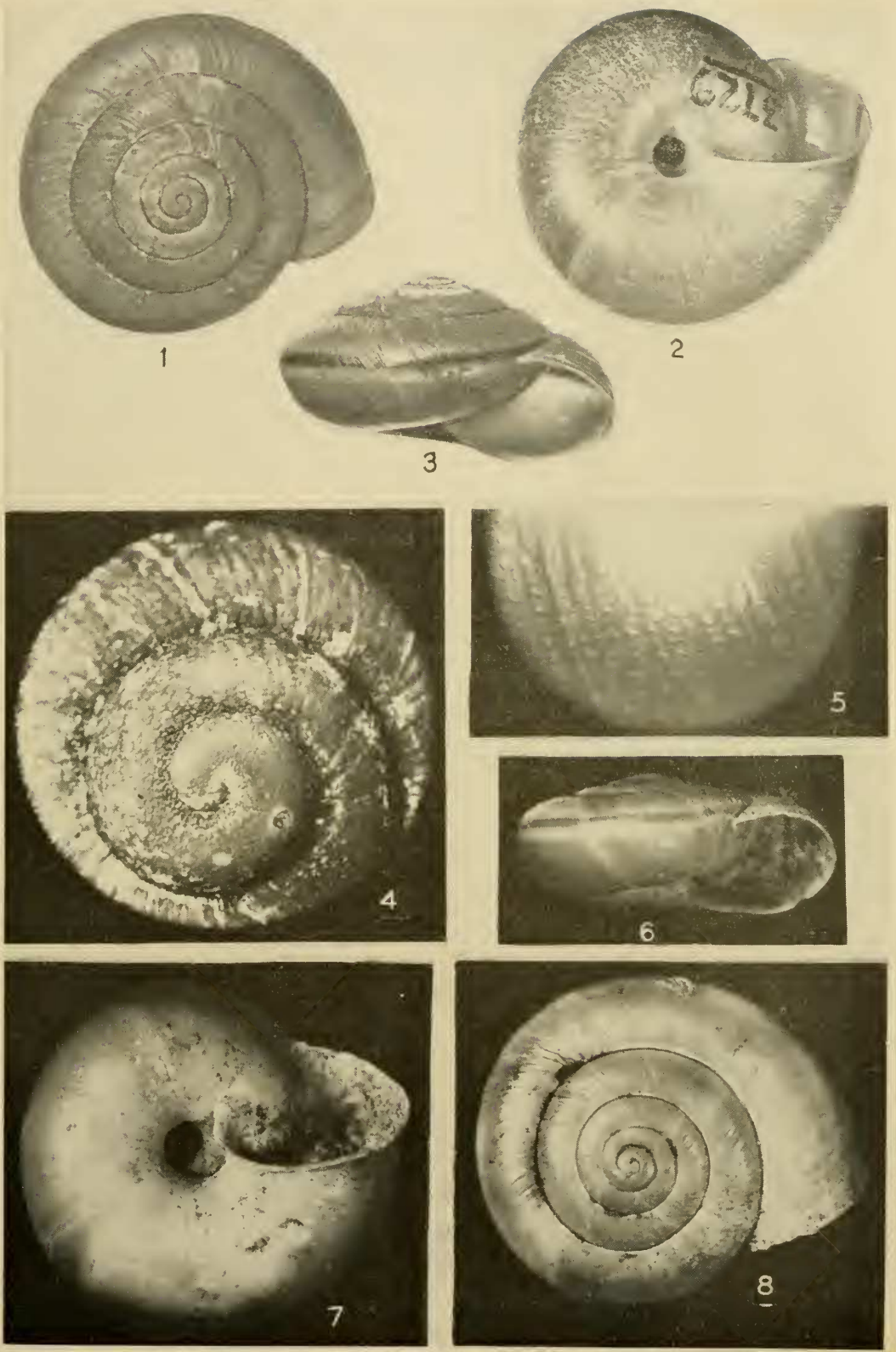
Fig. 9. *Helminthoglypta cypreophila* (Newcomb). Genitalia of specimen from 1 mile West of Columbia, Calaveras County, California.

TWO NEW LAND SHELLS FROM THE SOUTHERN APPALACHIANS

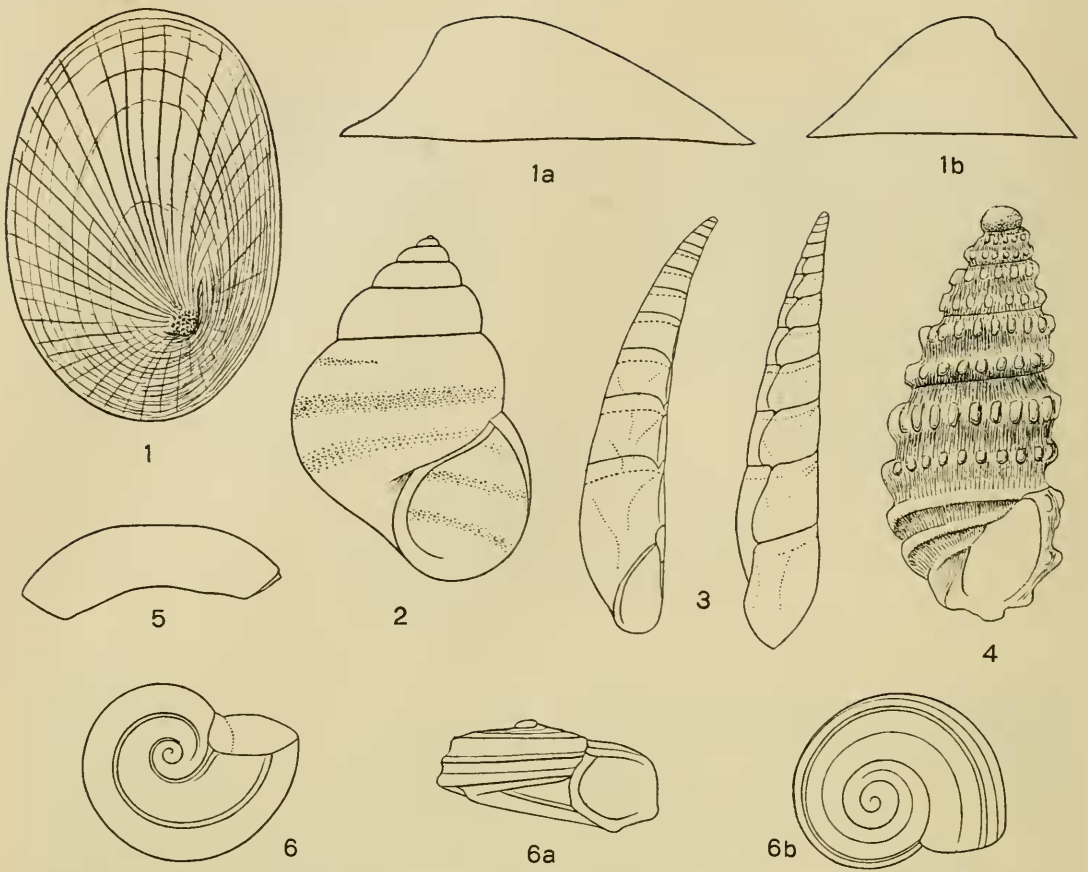
BY W. J. CLENCH AND A. F. ARCHER

The following report contains descriptions of the new land shells obtained during the past summer as well as a list of all the land mollusks collected at Mt. LeConte in the Great Smoky Mountains of Tennessee.

This field trip was made as part of a general survey of the southeastern states, first undertaken by the senior author under the auspices of the University of Michigan and since continued by the Museum of Comparative Zoology with financial aid from the University of Michigan, the Academy



Figs. 1-5. *Monadenia churchi* Hanna & Smith.
Figs. 6-8. *Monadenia troglodytes* Hanna & Smith.



1, *Hebetancylus cubensis* Pils. & Aguayo. 2, *Hydrobia torrei* P. & A.
 3, *Melanella bermudezi* P. & A. 4, *Odostomia (Miralda) havanensis* P. & A.
 5, *Meioceras constrictum* P. & A. 6, *Circulus cubanus* P. & A. 7, *Conulinus cockerelli* Pils., Durban, Natal.
 8, *Monadenia churchi* Hanna & Smith, 9, *Helminthoglypta cypreophila* (Nc.)

of Natural Science of Philadelphia and the various students who have participated in the several surveys. The results of these expeditions will not be published in a single report but will appear in independent papers by various people interested in specific groups of mollusks.

Three important regions were investigated. The area in northeastern Alabama was studied primarily to add long series of topotypes of several species described from Huntsville and Woodville, Alabama. These places are on the southern fringe of the Cumberland plateau, in a territory rich in limestone. It is a mountainous area, the tops of the mountains usually capped with sandstone, below which lie the massive limestone outcrops. North of this dissected area the land is elevated into the sandstone plateau.

The second area studied was that of east central Alabama in the vicinity of Choccolocco Mountain. This region is drained by several small tributaries of the Coosa River, and until the present trip had never been investigated. Several collections of Pleurocerids were made in the many springs and creeks especially about Anniston and Jacksonville.

Collections were made of land shells at Mt. LeConte in the Great Smoky Mountains of eastern Tennessee as little was known of its mollusk fauna. The territory in Tennessee and North Carolina, north and east of Mt. LeConte is practically unexplored conchologically. Only two mountain peaks have been at all seriously studied, namely Mitchell and Roan. Very little is known about the region south of Thunderhead in the lower Smokies. The distributional limits of many species characteristic of this mountain region can only be guessed at.

The authors are deeply grateful to Postmaster J. R. Kenamer of Woodville, Alabama, and to Mr. T. H. Wade and Mr. W. T. Williams of Huntsville, Alabama, for many favors and for much information about their regions.

It was a delight to us to find that both Sargent at Woodville and H. H. Smith at Huntsville were remembered by several of the older inhabitants.

POLYGYRA (TRIODOPSIS) SANA, sp. nov. Plate 7, figs. 4-6.

Description: Shell umbilicated, depressed globose, thin. Color of yellowish horn with a slightly reddish tone on the body whorl of some specimens. Peristome nearly white. Whorls 5-5 $\frac{1}{4}$, quite convex, especially the body whorl. Spire somewhat elevated. Aperture lunate. Peristome expanded, smooth and merging into a short broad columella, widening where it joins the parietal wall. Parietal wall smooth with a very thin callus. Suture impressed. Nuclear whorl smooth, succeeding whorls covered with axial riblets, the later whorls, especially the body whorl, are crossed by fine incised lines. The whole shell possessing a shining appearance.

	Maj.	Lesser	Ap.	Ap.	
Height	Diam.	Diam.	Height	Width	
11.9 mm.	19.4 mm.	16.8 mm.	6.0 mm.	8.0 mm.	Holotype
12.9	20.6	17.4	6.5	8.3	Paratype
12.9	19.5	16.0	5.2	7.4	Paratype
12.4	18.5	15.4	5.2	7.3	Paratype
11.3	17.5	14.4	4.9	6.7	Paratype
Height-diameter index 63.					

Holotype: M. C. Z., No. 95089. (34° 45' N.-86° 31' W), slopes of Big Cove, Monte Sano, Huntsville, Madison Co., Alabama, Clench and Archer collectors, July, 1932. Paratypes in the M.C.Z., the A.N.S.P. and the collection of A. F. Archer.

Remarks: This species is most nearly allied to *P. clausa* (Say). It is more depressed than *clausa* and the whorls are less rounded. The umbilicus is wider so that some of the upper whorls are visible. The peristome is wider, flatter and more expanded. In sculpture our species differs in having more strongly incised spiral lines and a shinier surface. This species can be compared with *P. thyroidus* (Say) in the following respects: The shell is more depressed; the peristome is narrower, thicker and less sharply edged; the umbilicus is more open; no parietal tooth is present; the axial riblets are more strongly raised, while the spiral lines are less deeply incised. This species so far as known is confined to the northeastern section of Monte Sano in the region of the Big Cove.

Habitat: Under leaves at the bottom of limestone ledges.

POLYGYRA (STENOTREMA) TURBINELLA, subsp. nov. Plate 7, figs. 1-3.

Description: Shell imperforate, globose and quite thin. Color of shell chestnut brown; parietal tooth creamy yellow tinged with reddish brown; inner edge of peristome of same color, but gradually shading into a dull brown along the outer edge. Whorls $5\frac{1}{2}$ to $5\frac{3}{4}$, slightly convex; body whorl strongly convex and rounded. Basal area only slightly rounded. Spire very moderately elevated and convex. Aperture transverse, slightly curved and constricted by a slightly curved parietal tooth. Peristome entirely free from the parietal lamella. Outer rim of the peristome rather thin where it joins the body whorl, becoming thinner at the outermost point of its curve and then becoming abruptly thickened by a deeply set, rounded denticle. A small sinus separates this denticle from a large callus along the inner margin of the basal area of the peristome. The callus bulges in toward the parietal tooth but bears a rather wide and deep basal notch. In the columellar region the inner margin of the peristome is cut back and separated from the parietal tooth by a deep indentation. The parietal tooth is large and projecting, curving slightly into the aperture at its outer end. A slight buttress projects from it toward the point where the outer rim of the peristome joins the body whorl. A definite and prominent tooth-like bulge produced on the inner margin of the outer lip contrasting with the well defined anal sinus. Internal lamella nearly straight, the blade curving outward slightly, thicker at the top where its edge leans a little toward the aperture, but thinner at its base. Suture very slightly impressed. Sculpture on the nuclear whorls consisting of incised axial lines which become weaker on the succeeding whorls, the rest of the shell being covered with rather closely crowded light colored hairs. Peristome and parietal tooth covered with microscopic beads.

		Lesser		
Height	Maj. Diam.	Diam.	Ap. Length	
6.5 mm.	9.6 mm.	8.8 mm.	4.7 mm.	Holotype
6.1	9.2	8.7	4.4	Paratype
6.3	8.7	8.1	4.5	Paratype
6.0	8.8	8.2	4.4	Paratype
6.2	8.9	8.6	4.6	Paratype
6.4	8.7	8.1	4.2	Paratype

Height-diameter index 67.